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general prevalence of the trilacunar trace in the seedlings, and the almost universal occurrence of a single ring of bundles connected at a very early age by cambium. This interfascicular cambium is usually absent in the adult stems of the herbaceous Ranunculaceae, but it is invariably present at some stage in the seedling. The evidence of the origin of herbs from woody plants is increasing.—J. M. C.

Germination of ascospores.—BRIERLY⁴⁹ has experimented with the germination of the ascospores of *Onygena equina*, a fungus occurring on decomposing horns and hoofs of cattle, sheep, etc. The results showed that "ripe" ascospores will germinate directly after a prolonged resting period, and that this period may be curtailed or eliminated by treating the spores with artificial gastric juice, but not by subjection to low temperatures. "The full-grown unripe ascospores and the chlamydospores will germinate immediately in the absence of digestive treatment."—J. M. C.

Respiration.—APPLEMAN⁵⁰ has investigated quantitatively the relation of oxidases and catalase to the process of respiration in potatoes. He found that there was no correlation between intensity of respiration and oxidase activity, but that catalase activity of the extracted juice of the potato shows a close correlation with the respiratory activity of the tuber. He considers, therefore, that the oxidases are not the controlling factor in respiratory intensity, at least in potato tubers, whatever rôle they may have in connection with biological oxidations.—CHARLES A. SHULL.

History of forest ecology.—In a rather extensive review of the literature of botany and of forestry investigations, BOERKER⁵¹ has attempted to trace the influence of both upon the development of the new phase of science known as forest ecology or silvics. Perhaps the most important part of the paper is that in which he traces the ecological principles which were stated by some of the earlier leaders in forestry, but which have received little attention from their fellow foresters. Of almost equal importance is the rather extensive bibliography.—GEO. D. FULLER.

Wandering tapetal nuclei.—PICKETT⁵² has described in detail the differentiation of the tapetum and its subsequent behavior in *Arisaema triphyllum*

⁴⁹ BRIERLY, WILLIAM B., Spore germination in *Onygena equina* Willd. Ann. Botany 31:127-132. 1917.

⁵⁰ APPLEMAN, CHARLES O., Relation of oxidases and catalase to respiration in plants. Amer. Jour. Botany 3:223-233. 1916.

⁵¹ BOERKER, R. H., A historical study of forest ecology; its development in the fields of botany and forestry. Forestry Quarterly 14:380-432. 1916.

⁵² PICKETT, F. L., The wandering tapetal nuclei of *Arisaema*. Amer. Jour. Bot. 3:461-469. pl. 20. figs. 8. 1916.